

REMARKS

At the outset, Applicants thank the Examiner for the thorough review and consideration of the subject application. The Non-Final Office Action of June 27, 2003 has been received and its contents thoroughly reviewed.

The Examiner rejected claims 1-22 under 35 U.S.C. § 103(a) as being unpatentable over Ahan (UK Pat. App. Pub. No. GB 2 325 329 A) in view of Bassetti, Jr. (U.S. Pat. No. 5,122,783, herein referred to as "Bassetti"). The rejection of these claims is traversed and reconsideration of the claims is respectfully requested in view of the following remarks.

Preliminarily, Applicants note claims 1-22 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Ahan in view of Bassetti. However, claims 21 and 22 are nonexistent. Accordingly, and for purposes of prosecution, Applicants hereby assume the Examiner intended to rejected only claims 1-20.

The rejection of claims 1-20 under 35 U.S.C. § 103(a) as being unpatentable over Ahan in view of Bassetti is traversed and reconsideration is respectfully requested.

Independent claim 1 is patentable over Ahan in view of Bassetti in that claim 1 recites a combination of elements including, for example, "consecutively providing the color data signals having a same color to the data lines by the demultiplexer unit before applying a different color signal." Neither Ahan nor Bassetti, singly or in combination, teaches or suggests at least this feature of the claimed invention. Accordingly, Applicant respectfully submits claims 2-10, which depend from claim 1, are also patentable over Ahan in view of Bassetti.

Independent claim 11 is patentable over Ahan in view of Bassetti in that claim 11 recites a combination of elements including, for example, "the demultiplexer consecutively providing the color data signals having a same color to the data lines before applying a different color signal." Neither Ahan nor Bassetti, singly or in combination, teaches or suggests at least this

feature of the claimed invention. Accordingly, Applicant respectfully submits that claims 12-20, which depend from claim 11, are also patentable over Ahan in view of Bassetti.

To establish a *prima facie* case of obviousness, (1) there must at least be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to combine the reference teachings and (2) the references when combined must teach or suggest all the claim limitations. See M.P.E.P. § 2143. Further, there must be some objective reason to combine the reference teachings.

In rejecting claims 1 and 11, the Examiner cites Ahan as failing to teach “consecutively providing the color data signals having a same color to the data lines by the demultiplexer unit before applying a different color.” Attempting to cure the deficiency of Ahan, the Examiner cites Bassetti as allegedly disclosing “...in Fig. 3A, and in col. 6, lines 47-68, where color data signals having a same color are consecutively provided to the data lines before applying a different color.” Applicants respectfully disagree.

For example, at column 6, lines 47-68, Applicants respectfully submit Bassetti discloses

“Referring to FIG. 3A, in a practical application it is desirable to have a large matrix of color-producing areas so that high definition images may be created. FIG. 3A shows a schematic front view of a display system 300 in which different color-producing sub-areas, 311 (R), 312 (G) and 313 (B), are placed close to one another to define a first pixel area Px_{11} in a flat panel screen area 310. The same pattern of color-producing sub-areas is repeated in a horizontally adjacent pixel area Px_{12} , then again in a next horizontally adjacent pixel area Px_{13} , and so on, to define a horizontal row of colored pixel areas, $Px_{11}, Px_{12}, Px_{13}, \dots, Px_{1N}$. The pattern is repeated vertically so that a vertically adjacent row contains pixels $Px_{21}, Px_{22}, Px_{23}, \dots, Px_{2N}$. A large number of rows and columns (e.g., 480 by 720) is typically defined on the face of the display panel 310. For the sake of brevity, multi-colored pixel areas will be referred to here simply as pixels, single-colored pixel sub-areas will be referred to as sub-pixels and an $N \times M$ matrix of pixel areas, where both N and M are much greater than one, will be referred to as a screen area.”

In view of the actual teaching of Bassetti cited above, Applicants respectfully submit Bassetti fails to teach or even suggest “consecutively providing the color data signals having a same color to the data lines by the demultiplexer unit before applying a different color signal,” as asserted by the Examiner.

In the “Response to Arguments” section of the present Office Action, the Examiner states “Bassetti discloses in Fig. 3A and in col. 7, lines 1-31 for consecutively providing the color data signals having the same color before applying a different color.”

Applicants respectfully submit Bassetti teaches at column 7, lines 1-31:

“The display system 300 of FIG. 3A is multiplexed. A gridwork of vertical wires 321, 322, 323, etc. and horizontal Wires 331, 332, 333, etc. cross at the color-producing sub-areas 311, 312, 313, etc. of flat panel 310 in order to selectively energize each of the color-producing sub-areas (once during each of a series of frame periods) towards at least one of the ON (100%) and OFF (0%) states. A dot clock signal 301 produced from a system clock generating unit 302 (also referred to as a Dot-clock generator) is applied to a column counter 303 (also referred as a Dot-clock), a row counter 304, a frame counter 305 and a digital shutter control unit 320. The latter unit 320 is also referred to here as a duty cycle and phase selector 320 (DCAPS for short). The output lines of column counter 303 and row counter 304 are coupled to the address input terminals of a random access memory (color RAM) 306. The data contents of the color RAM 306 are pre-set by a central processing unit (CPU) 307 whose data bus is coupled to a data input port of the color RAM 306.

For each row number, RW, and column number CO, generated by respective row counter 304 and column counter 303, the color RAM 306 produces a set of intensity numbers corresponding to the desired intensities of the R, G, and B sub-pixels in the addressed pixel area (PX_{RW;CO}).

In each unique display system (i.e., EGA, CGA or VGA as defined by IBM Corp. of New York), a predefined number of horizontally adjacent dots constitutes a horizontal row and a predefined number of vertically adjacent rows constitutes a frame.”

In view of the actual teaching of Bassetti cited above, Applicants respectfully submit Bassetti fails to teach or even suggest “consecutively providing the color data signals having the same color before applying a different color,” as asserted by the Examiner.

Further in the “Response to Arguments” section of the present Office Action, the Examiner states “Bassetti discloses where the sub-areas are energized, where the sub areas are shown in col. 6, lines 52, to be items 311, 312 and 313, which are individual colors. Further, in col. 8, lines 5-20, Bassetti discloses short duration energizing pixels are applied to the color producing subpixels simultaneously. Thus it is shown by Bassetti that each sub area is energized.”

That “Bassetti discloses where the sub-areas are energized, where the sub areas are shown in col. 6, lines 52, to be items 311, 312 and 313, which are individual colors” and that “Bassetti discloses short duration energizing pixels are applied to the color producing subpixels simultaneously,” all indicating that Bassetti shows wherein “each sub area is energized” is not at issue. What is at issue is whether Bassetti teaches or suggests the deficiency of Ahan. As evidenced by Applicants arguments presented above, the above-cited passages of Bassetti fail to teach or even suggest “consecutively providing the color data signals having a same color to the data lines by the demultiplexer unit before applying a different color signal,” as recited in claim 1, or “the demultiplexer consecutively providing the color data signals having a same color to the data lines before applying a different color signal,” as recited in claim 11.

Moreover, and after a thorough review of Bassetti, Applicants respectfully submit the teachings of Bassetti, as a whole, expressly teach away from the elements of the presently claimed invention. For example, Bassetti further discusses signals applied to the display system 300 illustrated in Figure 3A at column 7, lines 58-65, stating:

“Referring to FIG. 3B, there are illustrated four synchronous plots respectively showing the value, Modulo-N (Frame Number), and three brightness-setting waveforms respectively denoted as $B(1/3)P(0)$, $B(1/3)P(1)$, and $B(1/3)P(2)$, each plotted against time. Each waveform has a plurality of short duration pulses 340 and an FRDC of $1/3$ attributed to it but a different "phase number", $P(x)$, where $x=0, 1, 2$.”

At column 8, lines 22-40, Bassetti states:

“In the example of FIG. 4, the first phased waveform $B(1/3)P(0)$ is applied to energize all sub-pixels of column numbers 1, 4, 7, etc. within screen area 310. The second waveform $B(1/3)P(1)$ is applied to energize all sub-pixels within columns 2, 5, 8, etc. The third waveform $B(1/3)P(2)$ is applied to energize all sub-pixels within columns 3, 6, 9, etc. During the display of Frame 0, the image is as indicated at 400, with columns 1, 4, 7, etc. being lit up. During Frame 1, the image is as indicated at 400', with columns 2, 5, 8, etc. being lit up. During Frame 2, the image is as indicated at 400", with columns 3, 6, 9, etc. being lit up. The image for Frame 3 is 400. The image for Frame 4 is 400' and so on. This pattern repeats forever. A left to right movement of lit up areas is perceived across the screen if the rate is less than a persistence characteristic of the human eye 130. The movement is seen because of the asymmetrical positioning of lit up pixels over time. Once the movie marquee effect is perceived, it can become quite annoying.”

and further states at column 8, lines 47-49:

“The above-cited copending application of Bassetti explains how to minimize the movie marquee effect in multiplexed monochrome LCD flat panel displays by using a symmetric, square matrix, preferably of a seventeen-by-seventeen configuration. One question presented here is how to minimize flickering and streaming in multi-color displays where the display technology could be either multiplexed or active matrix.”

Bassetti then sets out the method by which multiple colors are to be displayed by a display system, stating at column 9, lines 1-36:

“If all the pixels of a screen area are commanded to display only one pure color, e.g., red, then the problem of flicker and movie marquee avoidance reduces to the monochrome problem. If all the pixels of a relatively large screen area are commanded to a

single mixed color (e.g. R and G both ON while B is OFF), then the active color planes can be hypothetically merged together if the phases of their driving signals are the same, and again the problem reduces to the monochrome situation... Referring to FIGS. 5A, 5B, 6, 7A and 7B, it was discovered that at least two or three different phase placement patterns should be made available for avoiding the perception of streaming in high-speed active matrix displays and low-speed multiplexed displays. ...Referring first to FIG. 5A, consider the case of a large screen area which is to be operated with a frame rate duty cycle (FRDC) of $\frac{1}{3}$. The screen area is divided into hypothetical square areas each of dimensions three-pixels by three-pixels. One such square area is high-lighted as $M_{3,3}$ within FIG. 5A.”

Continuing at column 9, lines 43-52, Bassetti teaches:

“The number of ON pixels (of one hypothetical color plane) are preferably distributed evenly across the surface of each $M_{3,3}$ tile and across the duration of the frames repetition group (FRG) to avoid flickering and movie marquee effects. Thus, in Frame 0, the three pixel areas of (row, column) coordinates, (1,2), (1,3) and (2,1) are lit up. In Frame 1, pixel areas (1,1), (2,2) and (3,3) are lit up. In Frame 2, pixel areas (2,3), (3,1) and (3,2) are lit up. This pattern is then repeated frame after frame.”

As explicitly disclosed by Bassetti, pixel areas (i.e., pixel areas Px 11, Px12, etc., as described with reference to Figure 3A) are energized as columns, wherein each column has repeatedly alternating red, green, and blue sub-pixels. Therefore, the color data signals of Bassetti have red, green, and blue signals intermixed. Therefore, Bassetti does not disclose a display system capable of displaying multiple colors (i.e., non-monochromatic displays) that receives color data signals of the same color to the data lines before receiving color data signals of a different color, as presently claimed.

According to M.P.E.P. § 2143.01, obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either explicitly or implicitly in the references themselves or in the knowledge generally available to one of ordinary skill in the art. In view of

the above, Applicants respectfully submit Bassetti includes no teaching, suggestion, or motivation, either implicitly or explicitly, to modify Ahan and arrive at the claimed invention.

According to M.P.E.P. § 707.07(f), where Applicants traverse any rejection, the Examiner should, if the rejection is repeated, take note of the Applicants' arguments and answer the substance of them. Applicants note that the arguments presented above are substantially identical to those presented in the Reply filed December 24, 2003. However, the present Office Action fails to answer the substance of all of these arguments. If the Examiner intends to maintain the present rejections, Applicants respectfully request the Examiner take note of the arguments and answer the substance them.

For at least the reasons set forth above, Applicants respectfully submit that claims 1 and 11, and claims 2-10 and 12-20, which depend from claims 1 and 11, respectively, are patentable over Ahan in view of Bassetti.

In concluding the rejection of claims 1 and 11, the Examiner states it would have been obvious "...to incorporate the feature of Bassetti into that of [Ahan] as they both teach a method of driving liquid crystal displays. The system of [Bassetti] is advantageous as it reduces the number of scanning lines, thus reducing power consumption and expense."

According to M.P.E.P. § 2144.02, the rationale to support a rejection under 35 U.S.C. § 103 may rely solely on logic and sound scientific principle. However, when an Examiner relies on a scientific theory, evidentiary support for the existence and meaning of that theory must be provided.

Therefore, assuming *arguendo* Bassetti discloses "consecutively providing the color data signals having a same color to the data lines by the demultiplexer unit before applying a different color signal", it appears from the Examiner's theory, that incorporating the "feature of Bassetti

into that of Ahan” would “[reduce] the number of scanning lines, thus reducing power consumption and expense,” and thus render the claimed invention obvious.

Applicant respectfully submits, however, evidentiary support for the existence and meaning of the theory outlined above must be, but has not been, provided. In the absence of such support, Applicant respectfully submits Ahan and Bassetti have merely been combined using the presently claimed invention as a template via improper hindsight reasoning.

According to M.P.E.P. § 707.07(f), where Applicants traverse any rejection, the Examiner should, if the rejection is repeated, take note of the Applicants’ arguments and answer the substance of them. Applicants note that the arguments presented above are substantially identical to those presented in the Reply filed December 24, 2003. However, the present Office Action fails to answer the substance of all of these arguments. If the Examiner intends to maintain the present rejections, Applicants respectfully request the Examiner take note of the arguments and answer the substance them.

In view of the above, each of the presently pending claims in this application is believed to be in immediate condition for allowance. Accordingly, the Examiner is respectfully requested to pass this application to issue.

If the Examiner deems that a telephone conversation would further the prosecution of this application, the Examiner is invited to call the undersigned at (202) 496-7500.


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Amendment dated October 15, 2004
Reply to final Office Action dated April 21, 2004

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If these papers are not considered timely filed by the Patent and Trademark Office, then a petition is hereby made under 37 C.F.R. §1.136, and any additional fees required under 37 C.F.R. §1.136 for any necessary extension of time, or any other fees required to complete the filing of this response, may be charged to Deposit Account No. 50-0911. Please credit any overpayment to deposit Account No. 50-0911. A duplicate copy of this sheet is enclosed.

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Respectfully submitted,

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